CALCULATIONS 7.2.4

The general equation for the determination of a BOD$_5$ value is:

$$BOD_5 \text{ (in mg/L)} = \frac{D_1 - D_2}{P}$$

where D_1 = initial DO of the sample,
D_2 = final DO of the sample after 5 days, and
P = decimal volumetric fraction of sample used.

If 100 mL of sample are diluted to 300 mL, then $P = \frac{100}{300} = 0.33$. Notice that if no dilution was necessary, $P = 1.0$ and the BOD$_5$ is determined by $D_1 - D_2$.

If more than one dilution of the sample results in residual DO of at least 1 mg/L and a DO depletion of at least 2 mg/L, and there is no evidence of toxicity at higher sample concentrations or the existence of an obvious anomaly, average the results that are in the acceptable range (American Public Health Association and others, 1995).